

CLAIMS

What is claimed is:

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- 5 1. A switch comprising:
 - a reserved pool of buffers in a shared memory, the reserved pool of buffers reserved for an egress port;
 - a shared pool of buffers in the shared memory, the shared pool of buffers shared by a plurality of egress ports; and
 - a pool select logic which selects a free buffer to allocate from the
- 10 reserved pool for storing data received from an ingress port to be forwarded to the egress port, and deallocates the selected buffer after the data has been forwarded to the egress port.
2. A switch as claimed in Claim 1 wherein the pool select logic selects a free buffer in the shared pool upon detecting no free buffer in the reserved pool.
- 15 3. A switch as claimed in Claim 1 further comprising:
 - a multicast pool of buffers in a shared memory shared by a plurality of egress ports.
4. A switch as claimed in Claim 3 wherein the pool select logic selects a free buffer from the multicast pool upon detecting an IP Multicast data packet received from
- 20 an ingress port.
5. A switch as claimed in Claim 3 further comprising:
 - a total free counter storing the number of free buffers in shared memory, the total free counter preset to the total number of buffers in the shared memory wherein the sum of the buffers in the multicast pool, the reserved pool and the
- 25 shared pool is greater than the total number of buffers in the shared memory.

6. A switch as claimed in Claim 3 further comprising:
a total free counter storing the number of free buffers in shared memory,
the total free counter preset to the total number of buffers in the shared memory
wherein the sum of the buffers in the multicast pool, the reserved pool and the
shared pool is equal to the total number of buffers in the shared memory.
7. A switch as claimed in Claim 5 wherein the pool select logic determines the
availability of a free buffer in the shared memory dependent on the number of
free buffers in the shared memory stored in the total free counter.
8. A switch as claimed in Claim 6 wherein the pool select logic determines the
availability of a free buffer in the shared memory dependent on the number of
free buffers in the shared memory stored in the total free counter.
9. A switch comprising:
a reserved pool of buffers in a shared memory, the reserved pool of
buffers reserved for an egress port;
a shared pool of buffers in the shared memory, the shared pool of buffers
shared by a plurality of egress ports;
a means for selecting a free buffer to allocate from the reserved pool for
storing data received from an ingress port to be forwarded to the egress port; and
a means for deallocating the selected buffer after the data has been
forwarded.
10. A switch as claimed in Claim 9 wherein the means for selecting selects a free
buffer in the shared pool upon detecting no free buffer in the reserved pool.
11. A switch as claimed in Claim 9 further comprising:

a multicast pool of buffers in a shared memory shared by a plurality of egress ports.

12. A switch as claimed in Claim 11 wherein the means for selecting selects a free buffer from the multicast pool upon detecting an IP Multicast data packet received from an ingress port.

13. A switch as claimed in Claim 12 further comprising:

means for counting the number of free buffers in shared memory, the means for counting preset to the total number of buffers in the shared memory wherein the sum of the buffers in the multicast pool, the reserved pool and the shared pool is greater than the total number of buffers in the shared memory.

14. A switch as claimed in Claim 12 further comprising:

means for counting the number of free buffers in shared memory, the means for counting preset to the total number of buffers in the shared memory wherein the sum of the buffers in the multicast pool, the reserved pool and the shared pool is equal to the total number of buffers in the shared memory.

15. A switch as claimed in Claim 13 wherein the means for selecting a free buffer determines the availability of a free buffer in the shared memory dependent on the number of free buffers in the shared memory stored in the means for counting.

16. A switch as claimed in Claim 14 wherein the means for selecting a free buffer determines the availability of a free buffer in the shared memory dependent on the number of free buffers in the shared memory stored in the means for counting.

17. A method for managing a shared memory in a switch comprising the steps of:

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deallocating the selected buffer after the data has been forwarded to the egress port.

18. A method as claimed in Claim 17 wherein the step of selecting selects a free
10 buffer in the shared pool upon detecting no free buffer in the reserved pool.
19. A method as claimed in Claim 17 further comprising the step of:
providing a multicast pool of buffers in a shared memory shared by a
plurality of egress ports.
20. A method as claimed in Claim 19 wherein the step of selecting selects a free
15 buffer from the multicast pool upon detecting an IP Multicast data packet
received from an ingress port.
21. A switch as claimed in Claim 20 further comprising:
providing a total free counter for counting the number of free buffers in
shared memory, the total free counter preset to the total number of buffers in the
20 shared memory wherein the sum of the buffers in the multicast pool, the reserved
pool and the shared pool is greater than the total number of buffers in the shared
memory.
22. A switch as claimed in Claim 20 further comprising:
providing a total free counter for counting the number of free buffers in
25 shared memory, the total free counter preset to the total number of buffers in the

shared memory wherein the sum of the buffers in the multicast pool, the reserved pool and the shared pool is equal to the total number of buffers in the shared memory.

23. A switch as claimed in Claim 21 further comprising the step of:

5 determining the availability of a free buffer in the shared memory dependent on the number of free buffers in the shared memory stored in the total free counter.

24. A switch as claimed in Claim 22 further comprising the step of:

10 determining the availability of a free buffer in the shared memory dependent on the number of free buffers in the shared memory stored in the total free counter.

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